

REMARKS

Applicants acknowledge receipt of an Office Action dated September 21, 2007.

Claims 1-12 and 14-49 are currently pending in the application. Claims 14-48 have been withdrawn from consideration and Applicants have reserved the right to request rejoinder of these claims under the provisions of MPEP §821.04. Thus, claims 1-12 and 49 are currently pending and under consideration.

Applicants respectfully request reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow.

Rejection Under 35 U.S.C. § 102

On page 3 of the Office Action, the PTO has rejected claims 1-3, 5, and 7-11 under 35 U.S.C. § 102(b) as allegedly being anticipated by U.K. Patent 2,010,287 to Birchall *et al.* (hereafter “Birchall”). Applicants traverse this rejection for the reason set forth below.

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). See generally MPEP § 2131.

Here, Birchall fails to disclose “an oxidized compound having a hydrophobic group and a polar group which are directly bonded to a surface thereof” as recited in independent claim 1.

At page 1, lines 30-34, Birchall describes a filler composition with:

“(A) an organo-silicon compound containing at least one group which is capable of reacting with a siliceous filler and at least one non-hydrolysable organic group attached directly or indirectly to Si,”

“(B) an organic stabiliser component as hereinafter defined which is capable of associating with the surface of a siliceous filler,” and

“(C) a finely divided particulate siliceous filler.”

As the organo-silicon compound (A), Birchall discusses: (a) Compounds with an organic molecular chain structure bearing at least one mono-alkoxy or di-alkoxy silyl group

or corresponding substituted alkoxy or di-alkoxy silyl groups; (b) Compounds with an organic molecular chain structure bearing at least one tri-alkoxy-silyl group; and (c) Compounds containing a mono-alkoxy, di-alkoxy or tri-alkoxy silyl group attached, by way of a short organic chain, to a sulphur-bearing group which may be for example a sulphydryl group (SH), a polysulphide group or the like. Specific examples of such compounds (c) are bis-(gamma-triethoxysilyl propyl) tetrasulphide and gamma-mercaptopropyl trimethoxy silane (see page 1, line 41-page 2, line 30).

As the organic stabiliser component (B), Birchall discusses compounds which contain at least one polar group. Suitable polar groups include ether oxygen atoms, amino nitrogen atoms (including those with and without a substituent on the nitrogen atom), hydroxyls, and ketone groups. Specifically, Birchall discusses polyethylene glycols and propylene glycols as the organic stabiliser component (B) (see page 2, lines 31-56).

As the siliceous filler (C), Birchall discusses a finely divided particulate siliceous filler having an average particle diameter less than 100 nm or a specific surface area greater than 25 m² per gram. Further, Birchall mentions that the siliceous particles containing free silanol groups at their surface is preferred (see page 2, line 57 - page 3, line 17).

In the Office Action, the PTO has suggested that Birchall discloses silica having a hydrophobic group on the surface thereof comprising a group -OR bonded to the oxidized compound, in which R represents a non-polarized group which is directly bonded to the surface, because a chemical reaction between the silica and the organo-silicon compound comprising -OR group evolves ethanol, therefore there is contact between the OR and the silica surface and has referred to page 4, lines 19-25.

However, at page 4, lines 19-25, Birchall discloses the testing or demonstration of the stabilising efficiency of the organic stabilising component. Specifically, Birchall, describes a test which includes: subjecting a mixture of the organo-silicon compound, the filler and the stabiliser to standard conditions of temperature and humidity; and measuring the evolution of alkanol (e.g. ethanol) when the organo-silicon compound contains alkoxy groups.

As described in more detail below, this testing method of the stabilising efficiency of the organic stabilising component does not disclose the presently claimed "oxidized

compound having a hydrophobic group and a polar group which are directly bonded to a surface thereof.”

With regard to the presently claimed oxidized compound, at least hydrophobic groups -OR on the surface of the oxidized compound are formed by replacing hydrogen atoms in hydroxyl groups on the surface of the oxidized compound by hydrophobic groups.

Birchall describes a method of preparing a polymer composition (rubber composition) containing the fillet composition (see Examples). Birchall describes the synthesis of Example 1 as follows:

“1 part of a commercially available grade of precipitated silica filler, containing 0.7% sodium ions and 0.7% alumina calculated on the dried material, was mixed with 0.48 parts of diethylene glycol and to this mixture 1 part of polybutadiene silicate* was added. The components of the mixture were thoroughly blended by ball-milling the mixture for 2 hours to produce a fine particle size product which will be referred to as the masterbatch.”

“Immediately after preparation of the masterbatch 15.6 parts of the masterbatch were blended on a mill with 100 parts of styrene-butadiene rubber (SBR 1509) and then the following components were added in the order stated.”

“The rubber composition was thoroughly blended on the twin-roll mill. Sheets of the rubber composition were then cured by heating in a hydraulic press at a temperature of 160°C for 8 minutes.”

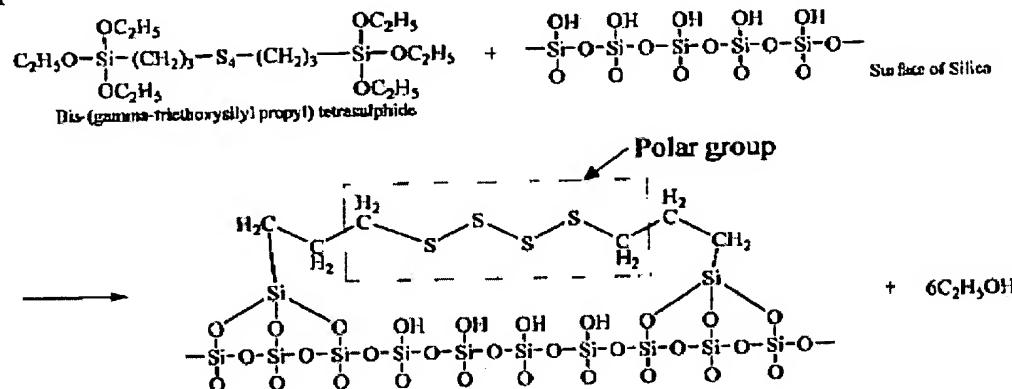
As discussed in the quotations above, Birchall's rubber composition is synthesized by merely mixing the organo-silicon compound, organic stabiliser component, siliceous filler and rubber, and heating the mixture. That is, the reaction of replacing hydrogen atoms in hydroxyl groups on the surface of the oxidized compound by hydrophobic groups has not occurred. For this reason, Applicants do not believe that Birchall discloses the presently claimed oxidized compound.

Furthermore, the oxidized compound of the presently claimed invention has a “hydrophobic group and a polar group which are directly bonded to a surface thereof,” and “the hydrophobic group is a group -OR, in which R represents a non-polarized group.” (Emphasis added).

However, even if the Birchall's chemical reaction between organo-silicon compound and siliceous filler had occurred, the R in the -OR group is not a non-polarized group.

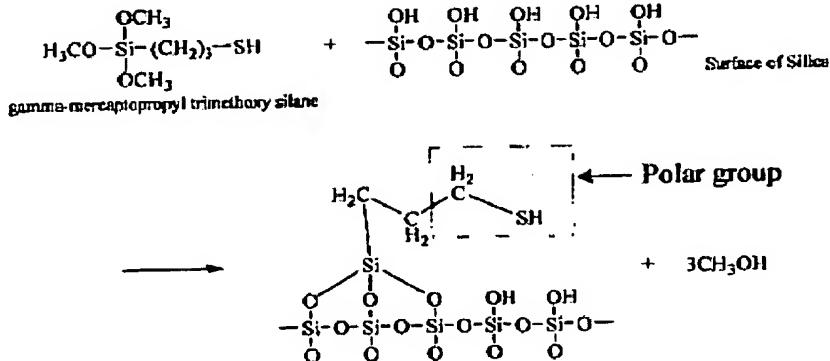
Birchall discloses that the specific examples of organo-silicon compound (A) are bis-(gamma-triethoxysilyl propyl) tetrasulphide and gamma-mercaptop-propyl trimethoxy silane (see page 1, line 41 - page 2, line 30). The chemical reaction between bis-(gamma-triethoxysilyl propyl) tetrasulphide and silanol groups at a surface of the siliceous filler is occurs as shown in Reaction 1 below:

Reaction 1



The chemical reaction between gamma-mercaptop-propyl trimethoxy silane and silanol groups at a surface of the siliceous filler is occurs as shown in Reaction 2 below:

Reaction 2



As seen in Reactions 1 and 2 above, the R in the -OR group is not a non-polarized group. Thus, Birchall fails to disclose the presently claimed oxidized compound.

In view of the foregoing, Applicants respectfully request reconsideration and withdrawal of the outstanding rejection under § 102.

Rejection Under 35 U.S.C. § 103

On page 4 of the Office Action, the PTO has rejected claims 4, 6, and 49 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Birchall in view of EP 0885937. In addition, and also on page 4 of the Office Action, the PTO has rejected claim 12 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Birchall in view of EP 0885937 to Zaima *et al.* (hereafter “Zaima”). Applicants traverse these rejections for the reasons set forth below.

In order to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, prior art references must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in Applicants’ disclosure. *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991).

Here, Birchall and Zaima, whether taken individually or in combination, fail to teach or suggest “an oxidized compound having a hydrophobic group and a polar group which are directly bonded to a surface thereof” as recited in independent claim 1. In this regard, Applicants refer to the technical discussion of the deficiencies in Birchall in the response to the §102 rejection above. Inasmuch as Zaima adds nothing to cure the deficiencies in Birchall, Applicants submit that the outstanding rejection based upon the combination of Birchall and Zaima is improper and ought to be withdrawn.

If an independent claim is nonobvious under § 103, then any claim depending therefrom is nonobvious. *In re Fine*, 5 USPQ2d 1596 (Fed. Cir. 1988). See MPEP § 2143.03. Thus, Applicants submit that claims 2-12 and 49, each of which ultimately

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depends from independent claim 1, are also non-obvious at least by virtue of their dependency from claim 1.

In view of the foregoing, Applicants respectfully request reconsideration and withdrawal of the outstanding rejections under § 103.

CONCLUSION

Applicants believe that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check or credit card payment form being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicants hereby petition for such extension under 37 C.F.R. § 1.136 and authorize payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

Date 12/21/07
FOLEY & LARDNER LLP
Customer Number: 22428
Telephone: (202) 672-5540
Facsimile: (202) 672-5399

By 
Paul D. Strain
Registration No. 47,369
Attorney for Applicants